predicted serum level at some appropriate time which will serve as a "check point" for the dosing plan. Significant deviation from the predicted level would indicate the need for further evaluation and possible revision of the dosage plan.

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HLA in Paternity Testing

HISTOCOMPATIBILITY ANTIGEN (HLA) typing now is recognized throughout the world as the single most discriminating test for determination of nonpaternity. Because of the large number of antigens involved in one genetic system of closely linked loci and the scattered distribution of these antigens in the population, the chance of exclusion with HLA typing alone is at least 91 percent and is 95 percent in combination with ABO and Rh typing. HLA testing has been used for about five years in paternity cases in Europe, and recently a joint committee of the American Medical Association and the American Bar Association studying serologic tests for paternity evaluation recommended "widespread inclusion of HLA studies in the battery of tests used in cases of disputed paternity."

HLA is the major histocompatibility system in man, and has an extreme diversity of antigens in several closely linked serologically detectable genetic loci. At present, the practical use of HLA in paternity cases is confined to typing of two loci, HLA-A and HLA-B. The system is one of codominant genes, so two antigens may be present for each locus. The World Health Organization Leukocyte Nomenclature Committee recognizes a total of 39 separate specificities for the A and B loci. A tissue typing laboratory that can detect most or all of these specificities can type for about 300 haplotypes with as many as 100,000 genotypes.

In cases of nonexclusion of a putative father, an estimate of the likelihood of paternity is desirable in utilizing the serologic results. In "one-man" cases, generally a computation is used that compares the nonexcluded putative father with a random male in the population. In our laboratory, formulas have been derived to utilize population haplotype frequencies rather than simple gene frequencies, since haplotypes generally are inherited as a unit and genetic disequilibrium is known to exist between antigens of HLA-A and HLA-B. This computation does not assume probable haplotypes, but takes into account all possibilities for each person as well as considering recombination frequencies. In our experience with over 1,000 disputed paternity cases, nearly 90 percent of the nonexcluded cases had probability of paternity greater than 90 percent. Undoubtedly, utilization of HLA typing in paternity cases in the United States will continue to increase rapidly as education about the extreme usefulness of such tests becomes more widespread and legislation is altered accordingly.

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Pacemaker Postmortem

THE CARDIAC PACEMAKER stands in the forefront of the bionic age. Thousands of people now live and eventually will die with a complex electrical pulse generator functioning inside their bodies. This generator provides a substitute electrical impulse for the heart's completely or incompletely blocked electrical system. In death, the question sometimes arises whether a pacemaker malfunction or complication contributed in any way.

The pathologist, therefore, should examine the pacemaker and its lead as an integral part of an autopsy. He or she always should ask: (1) Was there a signal? (2) Was it effective? (3) Could anything have altered it?

The generator should be tested electronically for rate, pulse amplitude, pulse width and R-wave